



Hostile Information System - Integrated, Online, National (VISION)

PM ITTS STOC Industry Conference

7 - 8 August 2001

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PROGRAM TEAM



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PM-ITTS

7-8 August

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What is VISION?

- **VISION is a comprehensive, holistic, top down redesign of the manner in which information is collected and managed, and ultimately transformed into knowledge**
- **VISION employs a web-centric approach that merges and exploits instrumentation and information management technologies.**



Background

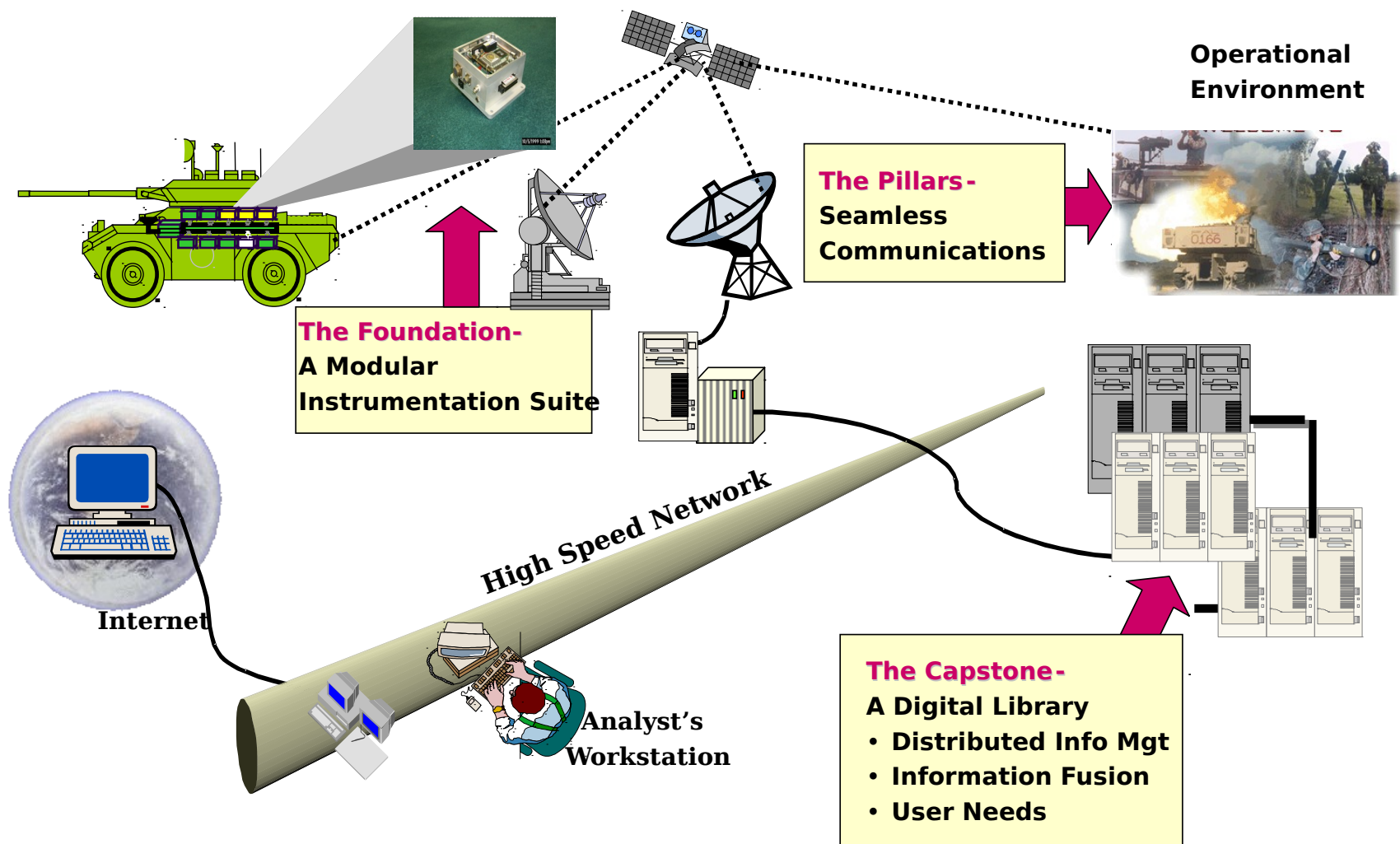
VISION is a new start program that is a web-based initiative for integrating information technology with instrumentation technology to provide a single stream on equipment from concept to combat.

VISION aids modeling and simulation efforts by:

- Decreasing the time required for test and experimentation
- Provide high fidelity reusable data
- Life cycle cataloging and management of information



Components of VISION



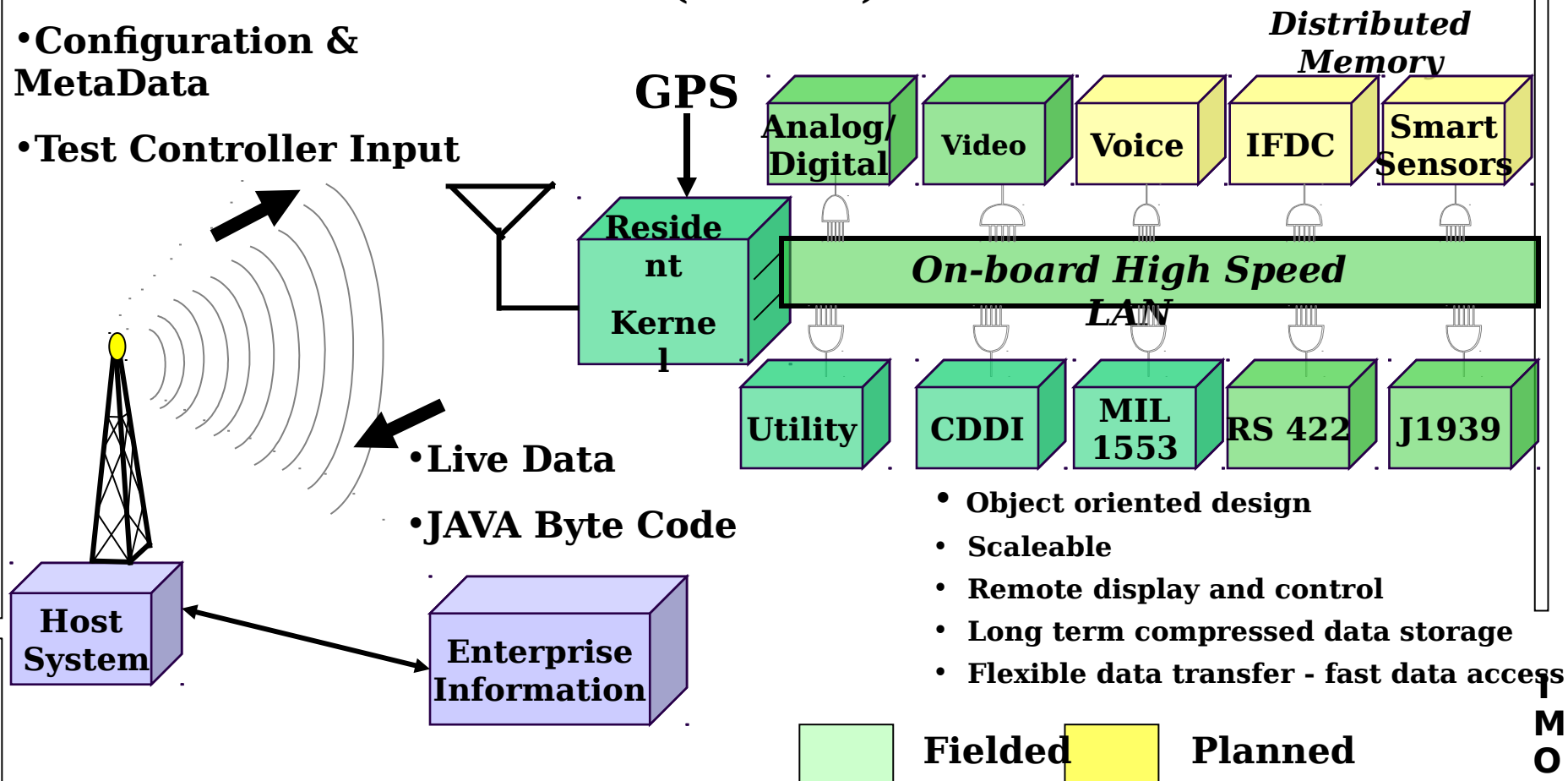


Instrumentation Technology Devices



ADVANCED DISTRIBUTED MODULAR ACQUISITION SYSTEM (ADMAS)

- Configuration & MetaData
- Test Controller Input





Instrumentation Devices

- Resident Kernel (GPS position and time)
- Analog
- SAE J-1939
- SAE J-1708
- Utility Bus
- MIL STD-1553
- CDDI
- 21st Century VPR
- Video
- RS-422
- **Voice**
- **High speed analog**
- **Family of smart sensors**

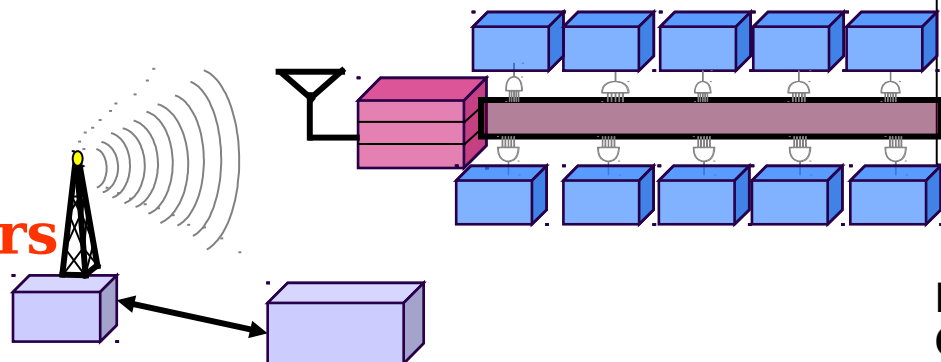


Fielded



Planned

Through CVII, DTC and
OTC will Develop
interoperable
instrumentation



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ADMAS Analog



- **32 Analog Channels**
 - **16 Bit Digitizer**
 - **200K samples/sec**
- **2 Counter Timer**
- **Up to 1.7 Gbytes removable solid state storage**
- **233 MHz Pentium Class Processor**
- **128 Mbytes Memory**
- **Attached/Controlled Signal Conditioner**



ADMAS Analog

**miniaturization of box(s)
and the analog signal
conditioner is desired and
represents a STOC
opportunity**



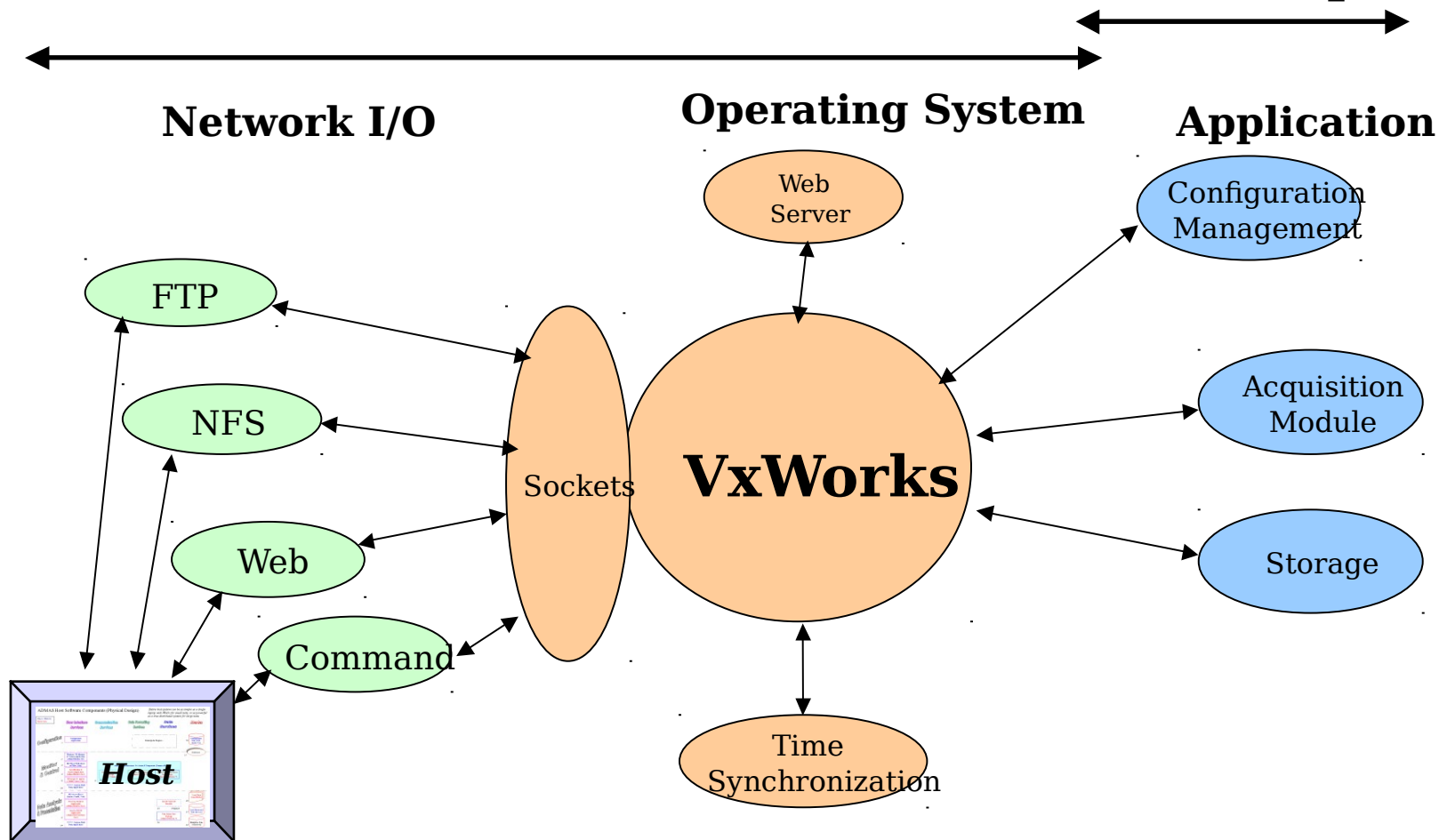
- Analog Channels
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ADMAS Logical Architecture

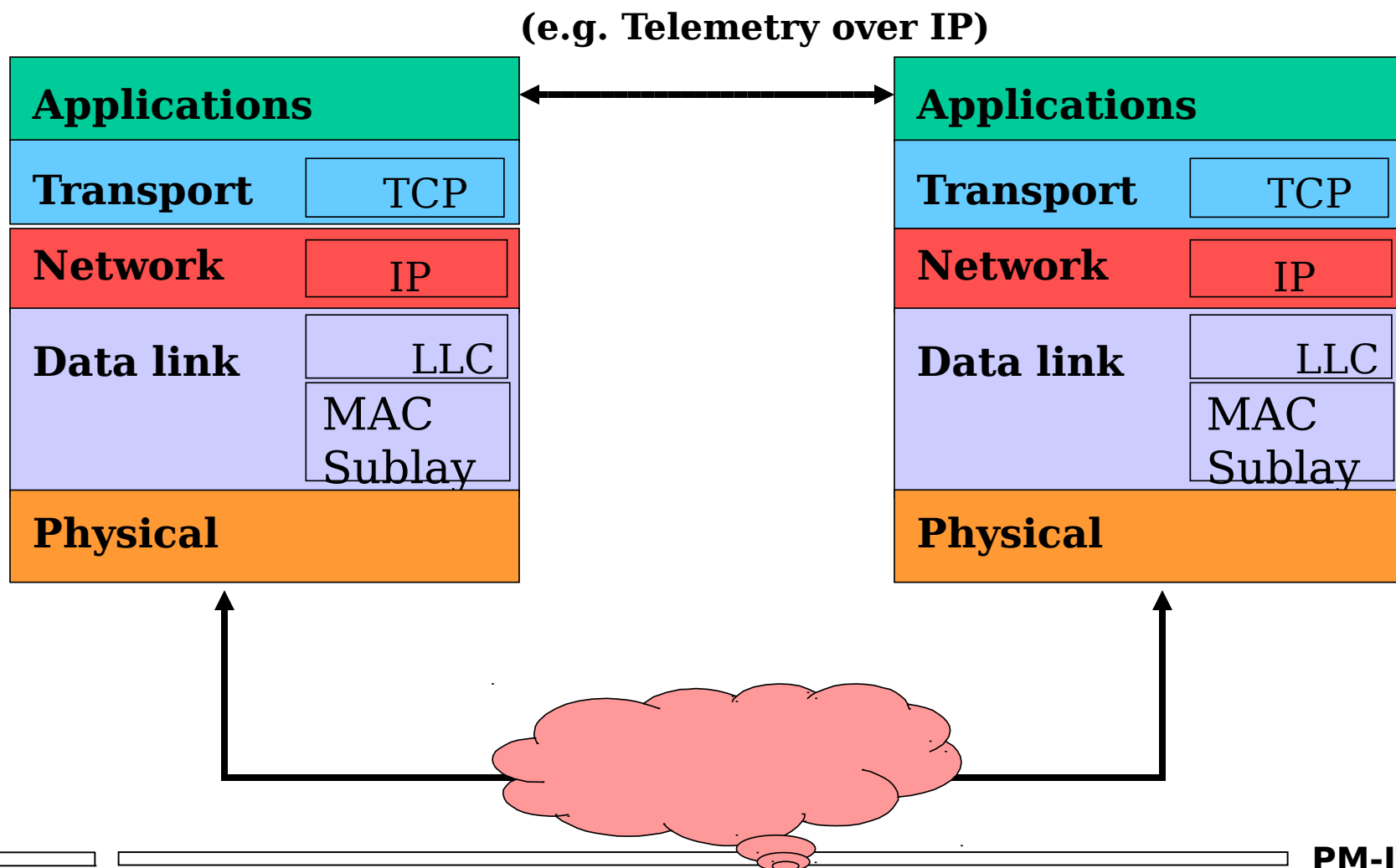
Generic

Device Specific





Network Layer Architecture

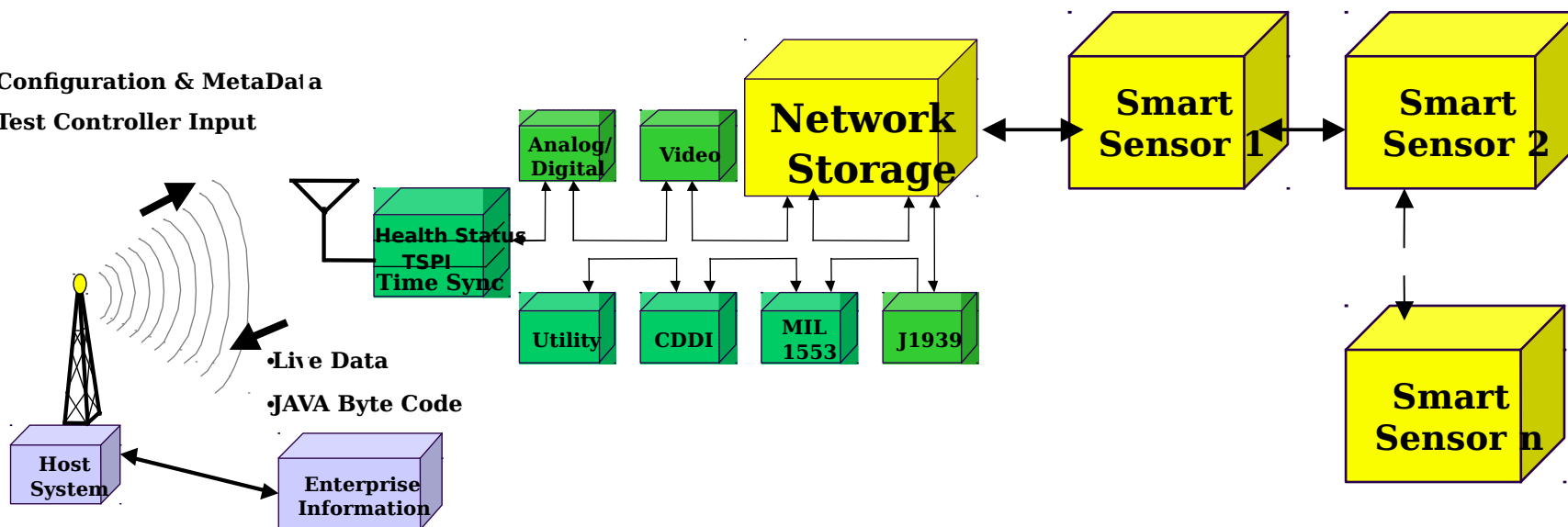




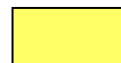
Smart Sensors Enhancement

• Configuration & MetaData

• Test Controller Input



Existing network devices converted to IEEE 1394



Smart sensor developments

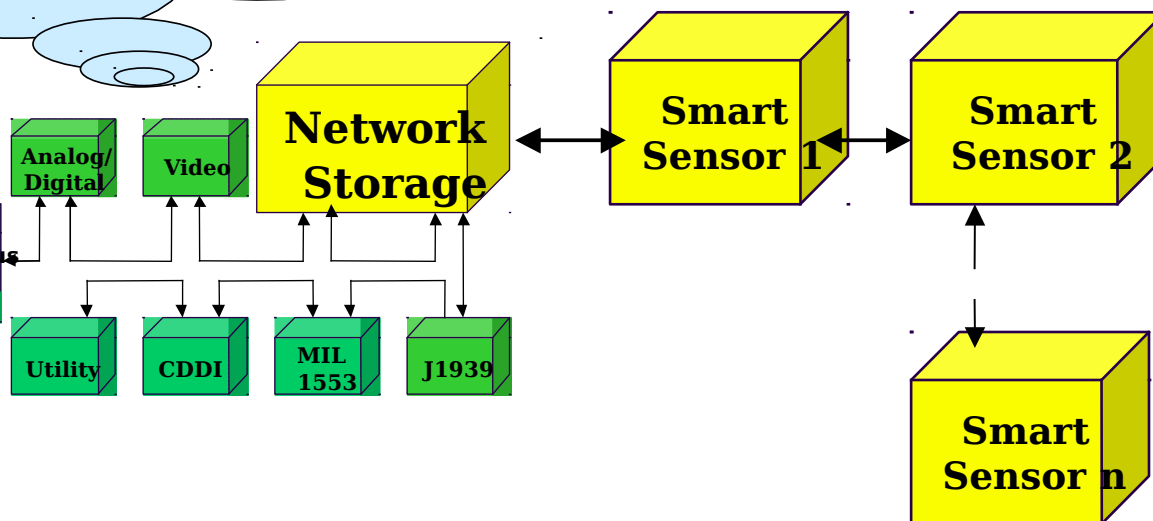
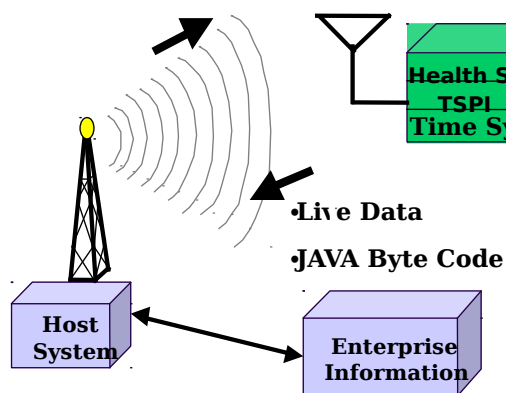


Smart Sensors

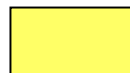
**Smart sensor development
is a Key Enhancement
Opportunity**

•Configuration & MetaData

•Test Controller Input



Existing network devices converted to IEEE 1394



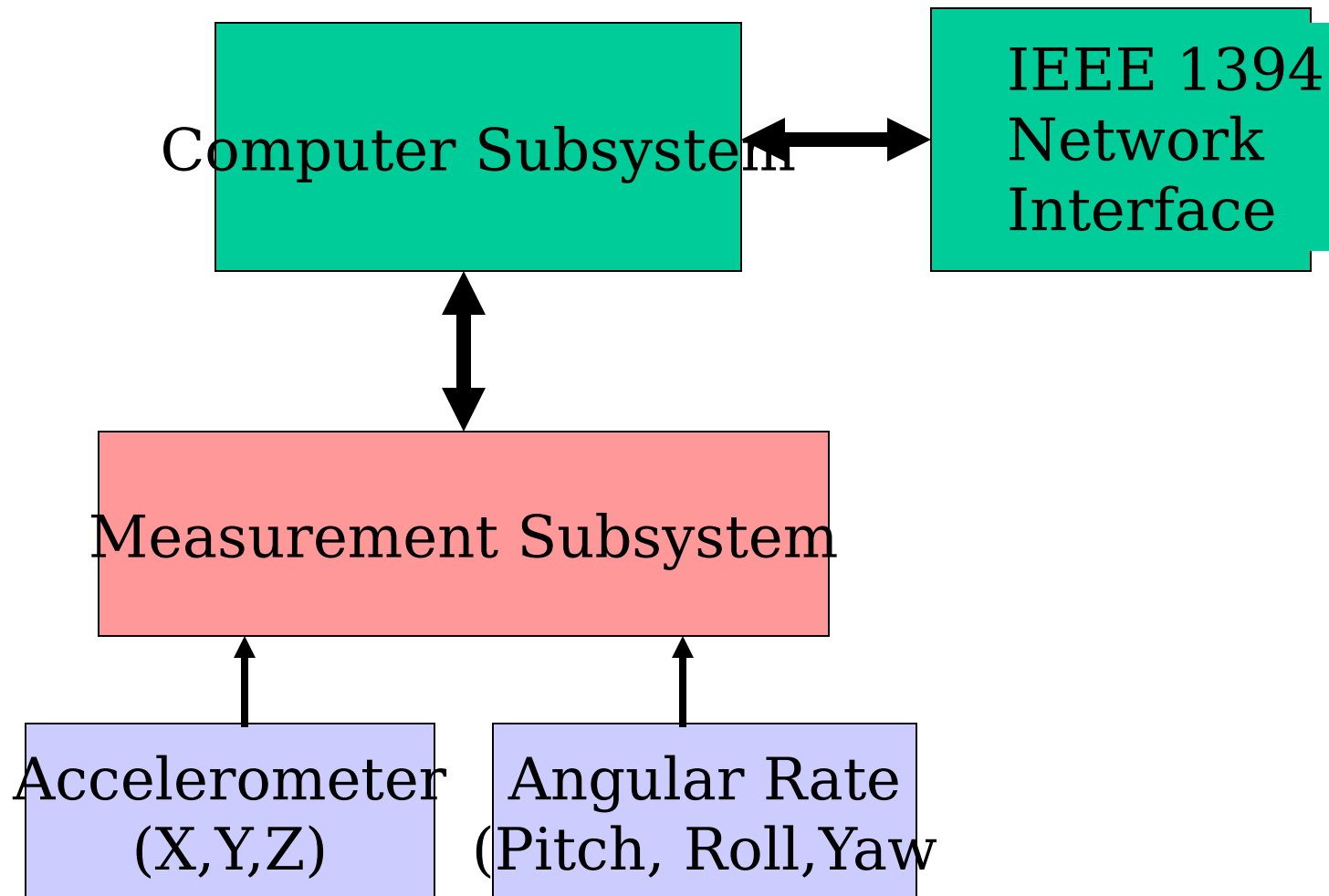
Smart sensor developments

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Motion Sensor – Planned First Smart Sensor





Information Management at the Device Level

Collection of metadata -

- collection of pertinent data prior to data acquisition**
- configuration of devices to include this data**
- requirement to interface with other data sources**

Each device designed to work as efficiently as possible with a common thread - same dB schema

BLOB -Binary Large Object (required data)

DEBLOB -Parse BLOB data into database



What is a Digital Library

- An ***integrated*** system of computer tools, services, data, applications and human processes, built to approved architectures, that enable the use of “***digital***” information to create ***knowledge***

- Collaborative knowledge



Information Technology

Digital Library

Client Tier
Web Browser

Application Tier
Enterprise Application Server

Data Tier
Repository

Client

Native Windows

Internet /
Intranet/Extranet

External Web
Servers

Web Server
Application Server
APIs

Full-Text Index

CORE
Oracle
7.3

Photos
.mpg, .jpg,
.tiff

Videos
.avi, .mov

Workload
.dbf

Test
Documents

Live Test
Monitoring
(ADMAS)

RAM/ILS
Image
3000

VIRTUAL
TEST DATA
Oracle 8.0

Institutional
Data Servers
MS SQL
Server

Complete
Data
Servers
(.uff,
.blb, .sdf)

Engr Unit
DB
Oracle 8.0

.doc,
.xls, .pdf
Terrain
Database
s



VISION DATA FLOW

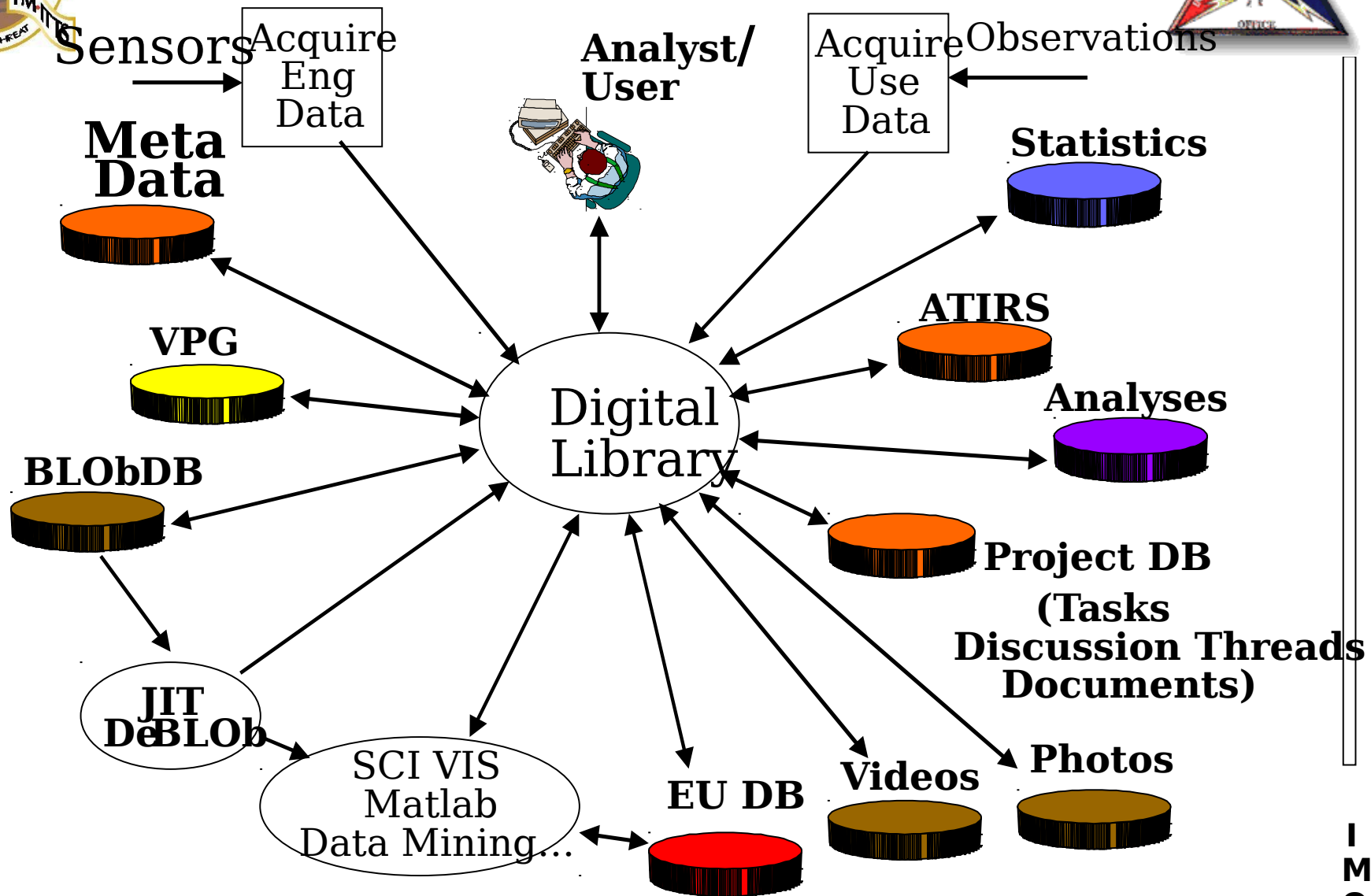
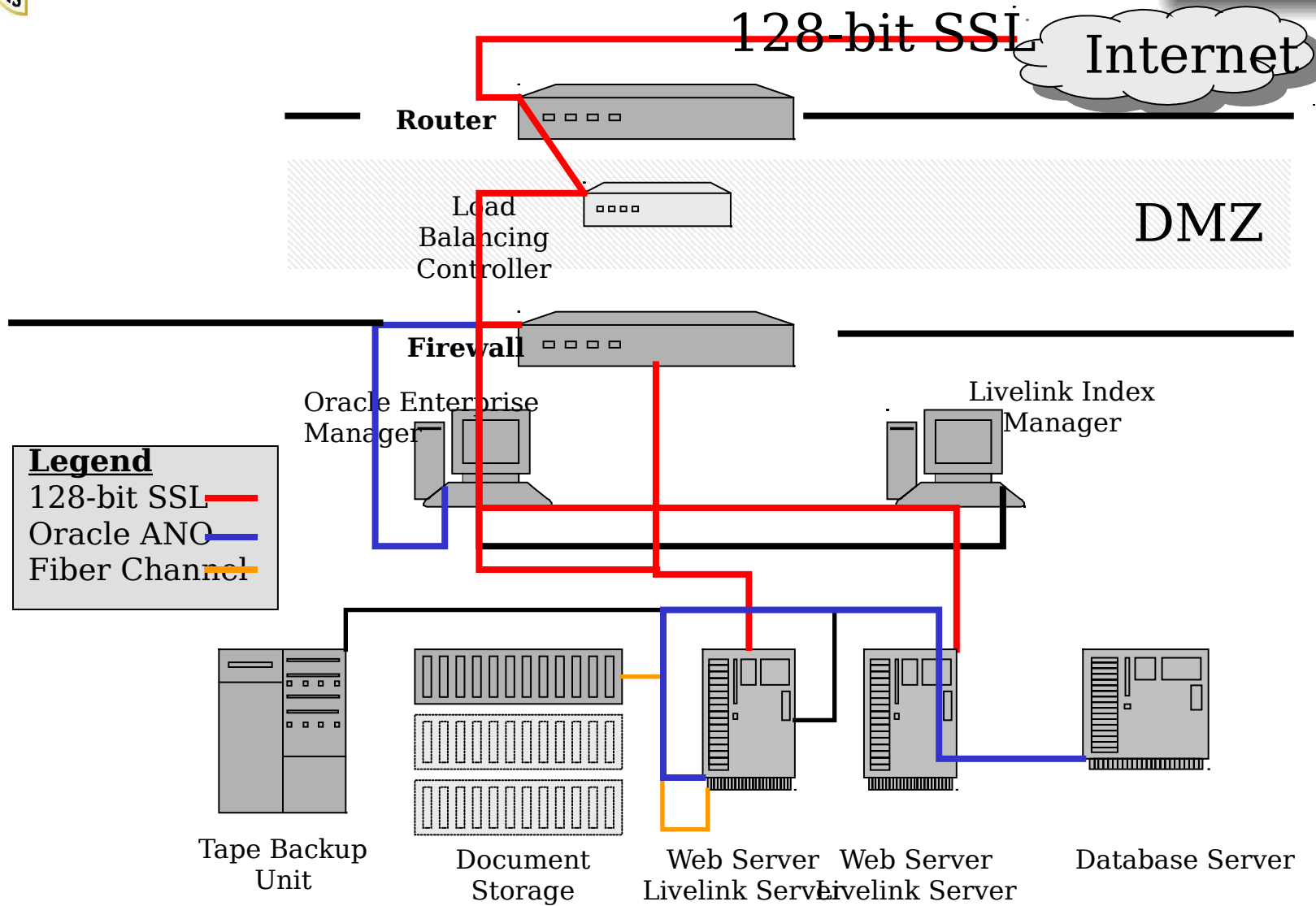




Diagram of VDL Architecture





Critical Technical & Operational Goals

Instrumentation:

Variety of modules (MIL-1553, SAE J-1939, SAE-J1708, Analog, video, voice)

Extendable, scaleable architecture

Small size - reduce by 50% to 75%; smart sensors playing card deck size

Low power consumption - reduce to 10 watts or lower

Robust - high shock and vibration, wide temperature range, 'dirty' power, rough handling

Network centric, TCP/IP/UDP based

Object oriented design

Digital library

Browser-server

Relational and object relational database technology

Object oriented

Integrate ATC databases, MSRC database, MSRC computational power

Provide fast, coordinated access to test data

Communications

IEEE 802.11



VISION

Program Schedule/Funding



	FY01				FY02				FY03				FY04				FY05				FY06				FY07				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1
ORD Generation				△△																									
ORD Release/Approval				△																									
Draft SOW/RFP Request					△																								
Proposals Due					△																								
Evaluations					△△																								
Program Reviews								△		△		△		△		△		△		△		△		△		△		△	
ADMAS Development					△																								
Data Management					△																								
Digital Library					△																								
Instrumentation Acquisition								△																					
Security					△																								

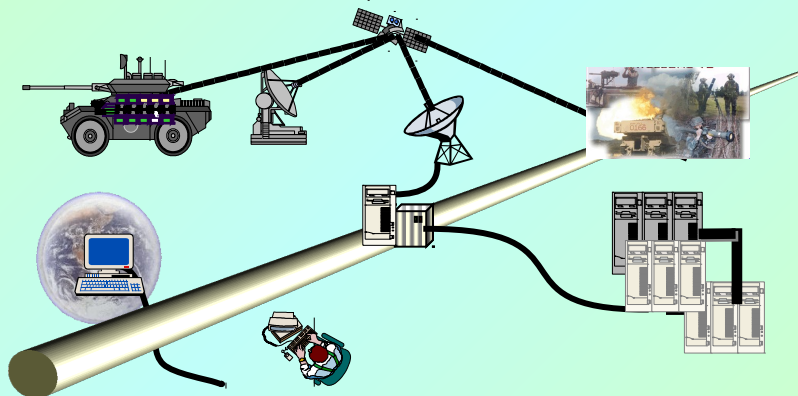
Fiscal Year										
<i>in millions \$</i>	PRIOR	2001	2002	2003	2004	2005	2006	2007	2008	
Total Requirement	0	0	\$\$	\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$	



Program Description by Phase/Year



VISION



CUSTOMER/ USERS

Customers:

- US Army Aberdeen Test Center (ATC)
- Other Test Centers

Users:

- Interim Brigade Combat Team
- FMTV
- M1A2 Abrams, BFVS
- AAV
- Future Combat Systems

DESCRIPTION

- Implements engineering performance (or DT) instrumentation as networked internet appliances
- Provides wireless/mobile internet connectivity at the test item level
- Network centric architecture based on established standards assures seamless information flow from instrumentation all the way to enterprise information management resources

FUNCTIONAL DATA

Project is unclassified

Program was not presented at last APBI



Acquisition/Contracting Strategy

- **Multiple Acquisitions program**
- **Starts in 1Q FY02 and ends in 4Q FY08**
- **Full & Open Competition (with ORD being released Oct 01)**
- **Technologies: Microprocessors, FPGA, Real-time OS, Database, Digital Library**
- **Vendors involved: Sachs-Freeman Association, Science Applications International Corporation, Pro Object, Nanavati Consulting, SRS**

System Integrator is the Army

- **TCP/IP over Firewire**
- **Security**



SUMMARY

VISION integrates instrumentation and information technologies to yield a network centric/web centric approach to data acquisition, information management, and knowledge synthesis.

VISION will aid modeling and simulation efforts by providing high fidelity reusable data while decreasing the time required for test and evaluation.

Potential opportunities lay in the development of Smart Sensors and device miniaturization



Acronyms

ATC	Aberdeen Test Center
ADMAS	Advanced Distributed Modular Acquisition System
API	Applications Programmers Interface
ATIRS	Army Test Incident Reporting System
BFVS	Bradley Fighting Vehicle System
CDDI	Copper Data Distribution Interface
CVII	Common Vehicle Instrumentation Initiative
DTC	Developmental Test Command
FMIV	Family of Modern Tactical Vehicles
GPS	Global Positioning System
JIT	Just In Time
OTC	Operational Test Command
VISION	Versatile Information System, Integrated, Online, Nationwide
VPG	Virtual Proving Grounds